



Focus on Emergency Towing

from Ecology's Spill Prevention, Preparedness, and Response Program

The following information clarifies Washington State's expectations for vessels requiring towing in an emergency while operating in state waters.

Oil spills have occurred because of lost propulsion or steering, grounding, or a hull breach resulting in release of cargo or bunkers. Emergency towing may have prevented the spill or mitigated its impact. There have been a number of instances where vessels operating in or near Washington State waters have required the assistance of an emergency towing vessel.

International maritime conventions and federal laws (administered by the United States Coast Guard) require tank ships operating in international and United States waters to maintain emergency towing equipment on board and to conduct emergency towing drills. The *International Convention for Safety of Life at Sea* (SOLAS) Chapter 5, Regulation 15.1 requires all tankers of 20,000 deadweight tons and above and built after January 1996 to be fitted with emergency towing arrangements at both ends of the ship. Tankers built before that date must be fitted with emergency towing arrangements not later than 1 January 1999. Cargo and passenger vessels, including fishing vessels, *are not required* under international, federal, or state law to maintain emergency towing equipment on board.

Steering and propulsion failures may occur on any type of vessel. Washington State recommends that all vessels prepare for emergency towing by maintaining emergency towing equipment on board, installing procedures for when and how to deploy it, and training personnel in the implementation of those procedures. Ideally, these procedures and these training and equipment requirements will be incorporated into each ship's ISM-approved Safety Management System.

Recommendations for ships without emergency towing equipment on board

Strong points: If your vessel does not have dedicated emergency towing equipment installed (such as a Smit Bracket system), identify strong points forward and aft to which an emergency tow line can be attached. Mooring bitts fore and aft must be secured to structural members to be strong enough to withstand the force of a tow line in the event of an emergency. A towing bridle of suitably strong material may be used to distribute the force between mooring bitts. Another strong point used successfully for emergency towing is the anchor windlass on the bow. A large chain may be secured around the base of the windlass with shackles so that an emergency tow line can be attached. The anchor chain itself may be used as an attachment point for the tow line if the chain is secured from running out. It is important to identify the strong points on your ship that may be used for emergency towing **before** an emergency towing situation occurs.

Tow lines, pennants, and marker buoys: Tug boats and other rescue vessels that provide emergency towing are equipped with tow lines that can be passed to a disabled vessel. However, under adverse weather conditions, it may not be possible to successfully pass a tow line to the deck of a disabled vessel. Your vessel should maintain a towing pennant or bridle of adequate strength that may be attached to a strong point or points and passed through a chock or chocks to the water. A brightly-colored floating buoy should be secured to the end of the pennant or bridle so the tow vessel can easily locate, retrieve, and secure it to their tow line. A disabled vessel with no power for deck winches will have to pay out one or more tow lines to the tow vessel in a controlled manner. Many ships today use Spectra, Plasma, or other very strong synthetic mooring lines which may be adequate to arrest the drift of the vessel until a stronger tow line is deployed. Other types of mooring lines are not recommended for emergency towing.

All emergency towing gear should be approved by a naval architect or marine engineer and endorsed by the appropriate classification society prior to use. This is essential to ensure the safety of personnel deploying this equipment.

Emergency towing procedures, training, and drills

Having suitable emergency towing equipment on board your vessel is the first step. The next step is to establish procedures for when and how to deploy the equipment. The best way to ensure readiness is to have clearly written emergency towing information and procedures that include:

- Identification of the location and capacity of each strong point;
- Location, capacity, and use of shackles, connecting links, and other connection equipment;
- Connection procedures, including use of a line throwing gun, if available;
- Basic towing safety, including emergency release procedures; and
- Lights and day shapes to be displayed and radio broadcast warnings.

In addition to clearly written procedures, it is essential to ensure crew members are trained to safely connect and deploy the equipment under emergency conditions. The crew should conduct regularly-scheduled emergency towing drills. An emergency towing drill is recommended at least every six months or when a significant number of crew members are replaced.

Sample emergency towing check list

Some actions to be taken by the Master (M) of the disabled vessel and the Towing Vessel Operator (TVO)			√
1.	M	Establish communication with local maritime authorities and towing vessel.	
2.	M/TVO	Maintain radio communication while connecting tow line and during emergency towing.	
3.	M/TVO	Radio broadcast warnings are periodically (every 15 minutes) transmitted.	
4.	M/TVO	Display appropriate lights and day shapes for the vessel not under command and for the towing vessel.	
5.	M/TVO	Plot the disabled vessel's position frequently, and calculate set and drift. Communicate position, set and drift frequently to local authorities and the towing vessel(s) assisting.	
6.	M/TVO	Determine whether the disabled vessel should be towed from the bow or the stern to minimize damage or improve handling under tow.	
7.	M	Determine the most suitable strong points for tow line connection, taking into consideration the safe working load and breaking strength of tow lines.	
8.	M/TVO	Consider size, horsepower, and maneuverability of towing vessel when deciding upon towing arrangement.	
9.	M	If available, ensure that electrical power, hydraulic pressure, compressed air, or steam is available for deck machinery such as winches and windlasses.	
10.	M	Choose fixed fairlead or chock with the largest possible radius of curvature for the tow line or bridle to ensure optimum maneuverability while under tow.	
11.	M/TVO	Determine how the tow line will be transferred between the disabled vessel and the towing vessel, including use of line-throwing appliance, if available. If a helicopter is to assist in the operation, make preparations for helicopter operations.	
12.	M/TVO	Ensure proper personal protection equipment is worn (gloves, eye protection, etc.) by personnel involved in the towing operation. ENSURE THAT PERSONNEL STAY OUT OF THE LINE OF PULL OF THE TOW LINE, PENNANT, AND BRIDLE LEGS.	

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13.	M/TVO	Ensure that proper tools are readily available near tow line or bridle connection point(s).	
14.	M/TVO	Ensure that tow line connection points are as free of obstructions as possible.	
15.	M/TVO	Decide on the towing plan and how often communications will occur once the tow is undertaken.	

Additional factors to take into consideration

1.	If it is not possible to pull the towing vessel's tow line on board the disabled vessel, consider the possibility of using the anchor chain as the point of connection. If this method is used, take precautions to ensure that the anchor chain does not run out. This may be accomplished by employing pawls or other chain stoppers. DO NOT DEPEND ON THE ANCHOR WINDLASS BRAKE ALONE.
2.	The greatest tow line stress occurs when the inertia of the disabled ship is overcome and later, if yawing is experienced. It is at these times that the tow line is most likely to part. ENSURE THAT PERSONNEL STAY OUT OF THE LINE OF PULL OF THE TOW LINE, PENNANT, AND BRIDLE LEGS.
3.	If the disabled vessel has steering, the vessel's rudder may be used to maintain a steady course astern of the towing vessel.
4.	If the vessel being towed does not have steering, the rudder should be secured amidships to minimize damage from the rudder slamming into the hull in heavy seas. If the disabled vessel is being towed from the stern, a rudder not secured amidships will tend to go hard-over as the ship gathers sternway and make it extremely difficult to maneuver during towing.
5.	If the disabled vessel has no steering but does have propulsion, the engines of the disabled vessel may be used to assist in getting the tow underway or to alter the ship's heading with respect to the weather. SHIP'S PROPULSION SHOULD NOT BE USED UNLESS ADVISED BY THE TOWING VESSEL.
6.	Consider altering the trim of the disabled vessel to improve maneuverability under tow.

Technical information on emergency towing

For additional information on emergency towing, including appropriate equipment, tow line breaking strength guidelines, and detailed emergency towing procedures, see *Peril at Sea and Salvage – A Guide for Masters* by the International Chamber of Shipping (OCIMF).

The actions, considerations, and factors contained in this publication are for your guidance only. Emergency towing equipment, procedures, and training should be approved by the operator of your vessel and incorporated into your company's Safety Management System.

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